

The 16.4 Meter Limited Motion Satellite Earth Station Antenna is designed to meet the requirements of Intelsat IESS earth stations and similar applications. This antenna is available in a limited and full azimuth coverage design.

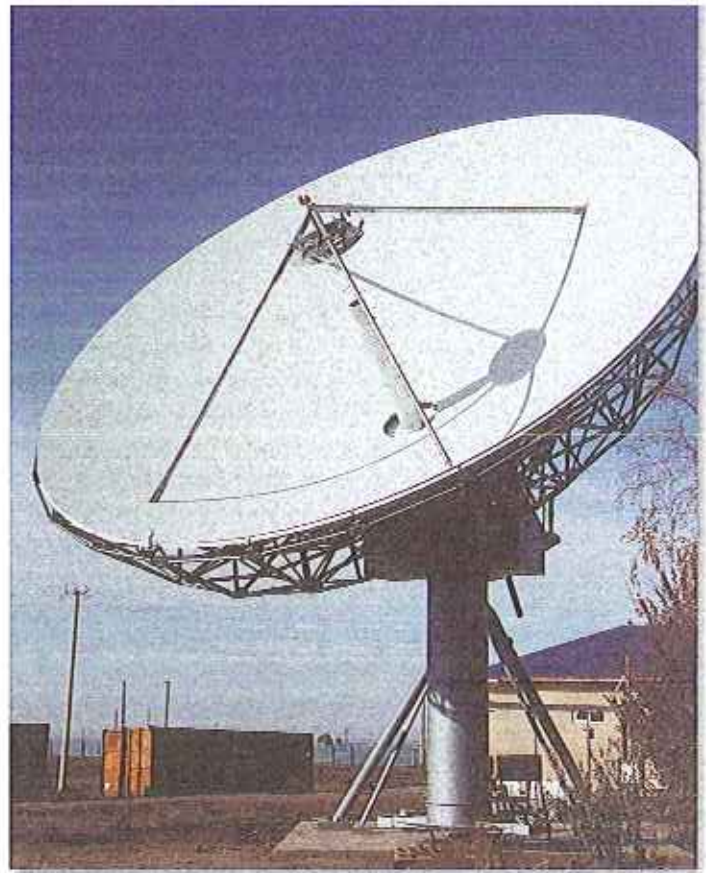
These antennas are primarily used in a Cassegrain configuration, utilizing both shaped and parabolic reflectors, focal point subreflectors and vertex mounted feeds. The elevation-over-azimuth mount employs jactuators to offer continuous elevation travel from 0° to 90° and azimuth travel of 180° accomplished in two overlapping sectors. The Extended Azimuth Coverage (EAC) design provides 270° azimuth in three overlapping sectors.

The reflector assembly incorporates precision aluminum AccuShape<sup>1</sup> panels that are field interchangeable within each tier. Reflector support structures are all steel, utilizing interchangeable radial trusses that terminate in a monocoque hub assembly. The structural interface between the panels and radial trusses creates an assembly that is easily field adjusted and achieves a highly accurate reflector surface. This design results in an inherently high stiffness-to-weight ratio, ease of fabrication, and simplicity of field installation.

Major design characteristics of these antennas can be modified to meet unique customer specifications and requirements including modifications for high wind operation and survival, and harsh environment finishes to ensure long life.

Optional equipment includes deicing subsystems, and a variety of tracking and drive configurations.

<sup>1</sup> AccuShape is a precision metal contouring process proprietary to RSI.

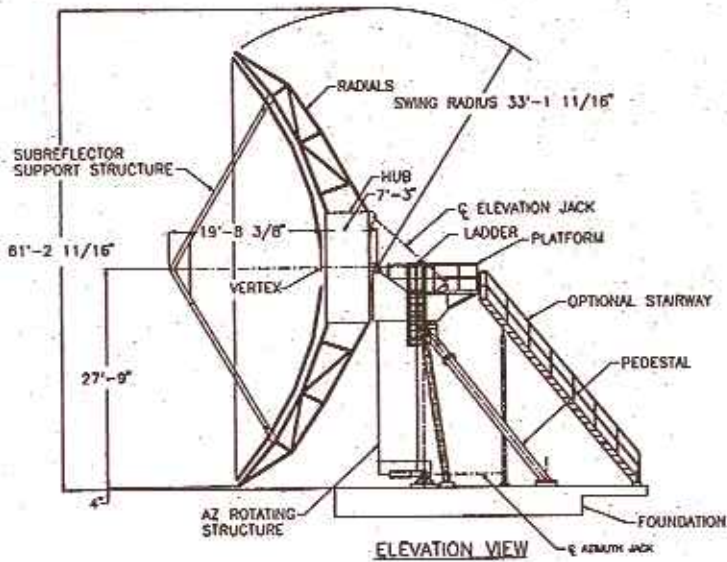


#### FEATURES/SERVICES PROVIDED

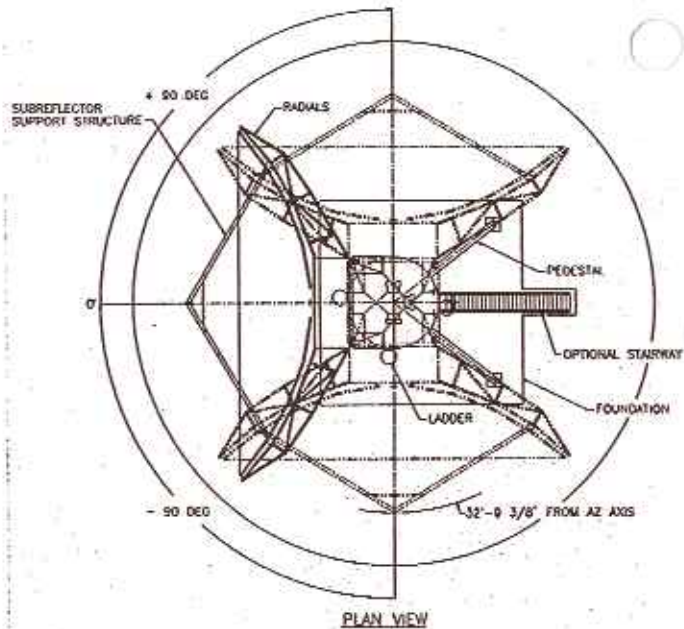
- Antennas meet requirements of Intelsat IESS earth stations
- Elevation-over-azimuth design provides 0° to 90° elevation travel and 180° azimuth travel in two sectors
- AccuShape panels provide superior contour accuracy
- Dual Polarization – feed systems
- Switchable linear to circular feeds
- Low Noise Amplifiers
- Interfacility Links
- Turnkey Installation
- Civil Works
- Servo Control and Tracking Receivers
- Computer Control RS232 / 422 interface
- Shipping to site
- Deicing Systems
- Two-Speed Drive
- Auxiliary Drive



## 16.4 METER SPACE ENVELOPE



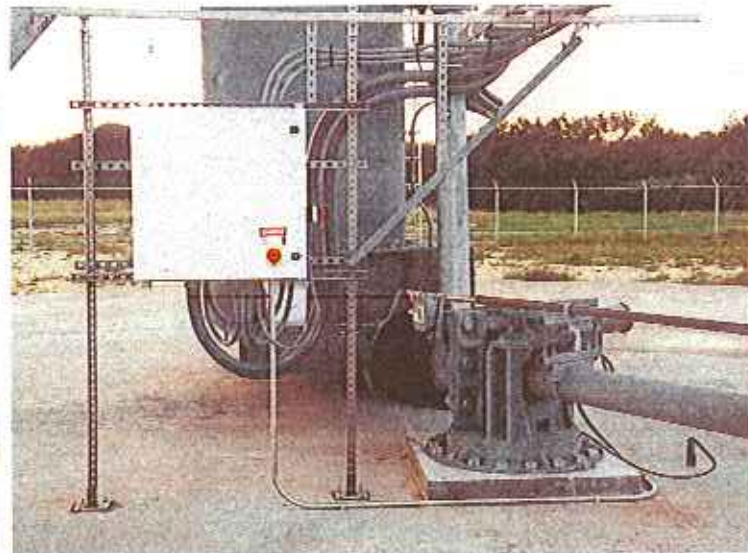
16.4M (54 FT.) ANTENNA—LIMITED MOTION



With Stairway (Option) to LNA's

### GROUND LEVEL AZIMUTH DRIVE

- Ease of maintenance



Servo Drive Cabinet

Azimuth Jack

**RSI Universal Antennas**  
 900 Alpha Drive, Richardson Texas 75081 USA  
 Tel: (972)-690-8865 Fax: (972)-644-6322



## SPECIFICATIONS

### ELECTRICAL – RF

	<u>Circular Polarization</u>	<u>Linear Polarization</u>	<u>Extended Circular Polarization</u>
Four Port Reuse Feed (GHz)			
Receive	3.625 to 4.2	3.625 to 4.2	3.4 to 4.2
Transmit	5.85 to 6.425	5.85 to 6.425	5.85 to 6.725
Gain			
Receive (3.95 GHz)	55.5 dB	55.4 dB	55.2 dB
Transmit (6.175 GHz)	58.25 dB	58.25 dB	58.25 dB
VSWR	1.25:1	1.25:1	1.25:1
Feed Loss			
Rx	.2 dB	.2 dB	.2 dB
Tx	.25 dB	.25 dB	.25 dB
Beamwidth			
Receive 3 dB	0.32 deg	0.32 deg	0.32 deg
Transmit 3 Db	0.21 deg	0.21 deg	0.21 deg
Beamwidth			
Receive 15 Db	0.64 deg	0.64 deg	0.64 deg
Transmit 15 Db	0.42 deg	0.42 deg	0.42 deg
First Sidelobe	- 14 dB	- 14 dB	- 14 dB
Radiation Pattern	Meets FCC regulation 25 209, Eutelsat, IES and CCIR Recommendation 580		
Antenna Noise Temperature			
10 deg Elevation	40 deg K	40 deg K	54 deg K
40 deg Elevation	27 deg K	32 deg K	47 deg K
VAR (Axial Ratio)	1.06 (0.5 dB)		1.06 (0.5 dB)
Power Handling Capability	5KW/port	5KW/port	5KW/port
Cross Pol. Discrimination within 0.5 dB beamwidth		35 dB	
Isolation Between Ports (dB)	21 TxTx 18 RxRx	35 TxTx 35 RxRx	23 TxTx 21 RxRx
Transmit to Receive	85 dB	85 dB	85 dB
G/T at 10° elevation with 35°K LNA	36.0 + 20 log f/4	35.9 + 20 log f/4	35.1 + 20 log f/4

### MECHANICAL

Reflector Diameter	16.4 meter -- 53' 10"
Focal Length	16'
F/D	0.297
Reflector Construction	84 panels
Total weight	80,000 lbs.
Reflector Surface Accuracy	<0.026 inch RMS, std. winds between 5 and 60 deg elevation
Antenna Travel	
Elevation	0 to 90
Azimuth	+/-90, two sectors overlapping
Tracking Velocity	.015 deg/sec
Slew Velocity (optional)	.12 deg/sec
Foundation – concrete	135 cu. Yds

### ENVIRONMENTAL

Wind Loading		<u>Seismic Acceleration</u>
Normal	30 MPH, gusting to 45	Horizontal .35g
Degraded	45 MPH, gusting to 60	Vertical .15g
Survival -- Any Angle	125 MPH	

### • Tracking Accuracy – Optrack

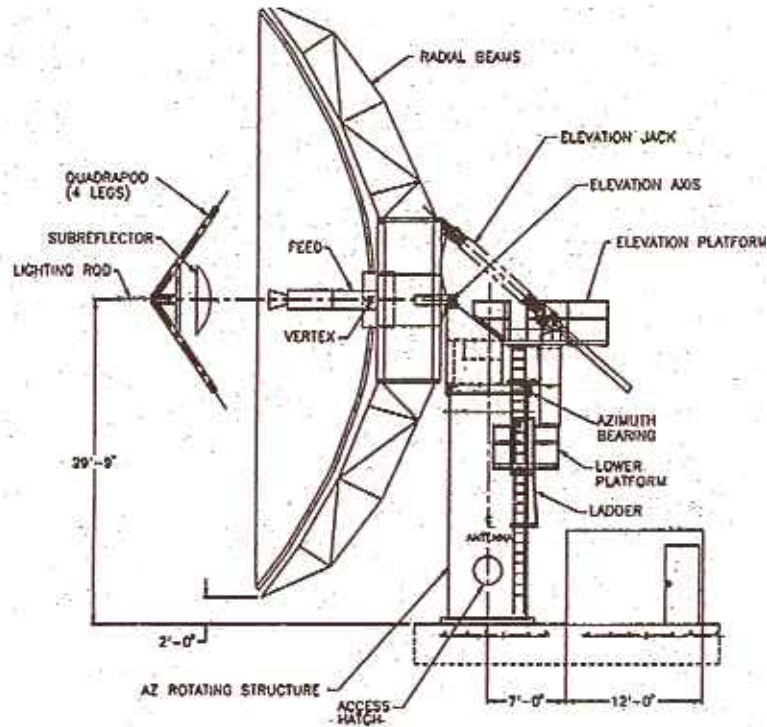
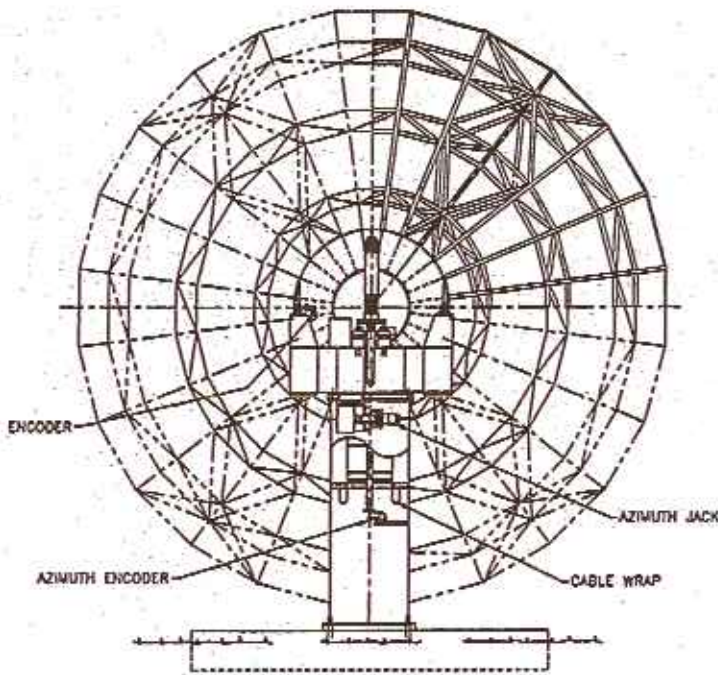
- Normally better than 10% of the receive beamwidth in winds of 30 mph gusting to 45 mph, satellite inclination of up to 15° and signal scintillation of up to 2 dB.

### • Pointing Accuracy

- Better than 20% of the receive beamwidth (Model 100/100v) in winds of 30 mph gusting to 45 mph.

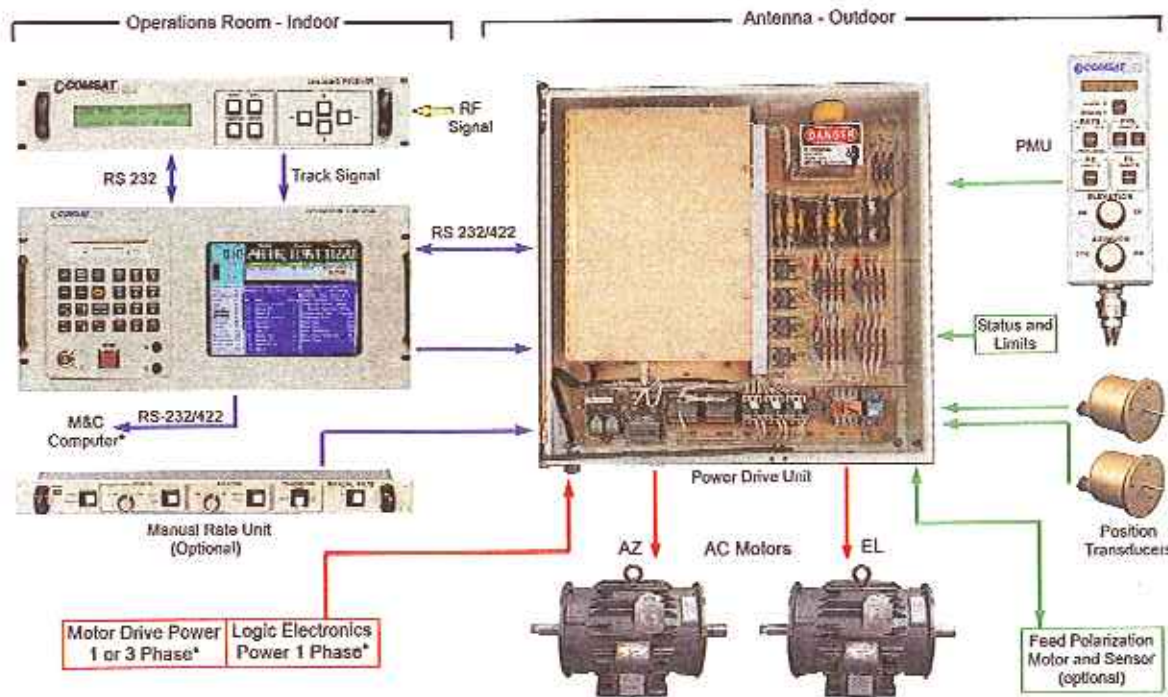


16.4 METER EXTENDED AZIMUTH REPOSITIONED ANTENNA  
270° AZIMUTH ROTATION 3 SECTORS



**SERVO CONTROL SYSTEM**

The RSI control system can be used with almost any antenna for precision satellite tracking, telemetry and control, radar, radio and optical telescope applications.



Operational Modes	
<b>Tracking</b> Optrack Steptrack Monopulse*	<b>Pointing</b> Intelsat 11 Star Track Preset Designate NORAD* Table Track*
<b>Acquisition</b> Box Scan* Spiral Scan* Geo Scan* Raster Scan*	<b>Other</b> Maintenance Manual Stop Computer Simulator Polarization* Auto Stow*

\*Optional

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